Cole-Parmer®

SP-400-BIO Life Science Spectrophotometer

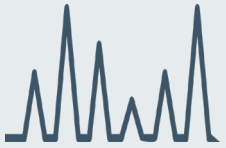
- Preprogrammed for DNA, RNA and protein analysis
- Scanning diode array technology
- Multiple USB ports for data storage and printer compatibility

SP-400-BIO Spectrophotometer

The SP-400-BIO is a simple, low-cost, easy-to-use UV/Visible spectrophotometer dedicated for life science applications. It is compatible with a wide range of small volume cuvettes, making it ideal for measuring DNA and RNA samples. To make measurements quicker and easier, the SP-400-BIO has preprogrammed methods for the measurement of nucleic acid concentration and purity, protein assays and cell density. This spectrophotometer measures across a UV/Visible wavelength range of 198 to 800 nm with a narrow spectral bandwidth of 3 mm. The SP-400-BIO is covered by a 2 year warranty which includes the xenon lamp.

Key Features

- Life science spectrophotometer
- Preprogrammed for DNA, RNA and protein analysis
- Compatible with ultra-micro, semi-micro, micro, and macro cuvettes
- Scanning diode array technology
- Color touchscreen navigation
- Small footprint and lightweight (< 3 kg)
- Fast scan speed
- English, French, German, Italian, and Spanish language options
- Multiple USB ports for data storage and printer connectivity
- 2 year warranty including xenon lamp



Multiple measurement modes available

Color touchscreen navigation

DNA, RNA and protein analysis

Scanning diode array technology

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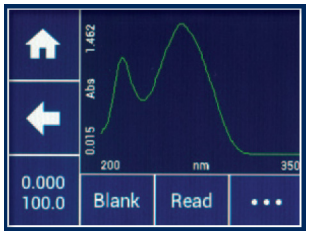
Measurement Modes

The nucleic acid measurement mode can be used to quantify the concentration and purity of dsDNA, ssDNA, RNA, and oligonucleotides using wavelengths recorded at 260, 280 and 230 nm, with an optional correction at 320 nm. The concentration is calculated along with the corresponding purity ratios 260/280 nm and 260/230 nm. At the touch of a button, it is easy to visually check the purity of the nucleic acids. This is done by identifying peak levels in the purity scan between 200 and 350 nm. This is especially useful for RNA samples where impurities may be present at 230 nm, but cannot be detected using the 260/280 nm ratio measurement.



Where nucleic acid concentrations are high, or there are only small sample volumes available for testing, there is a dilution option which can be used to calculate the original concentration of diluted samples.

The protein measurement mode can be used to calculate protein concentration by creating standard curves from protein assay kits. With preprogrammed methods for measuring Bradford, Lowry, Biuret, and Bicinchoninic Acid (BCA) assays, up to 6 standards can be measured with 3 replicates of each standard to minimize any dilution errors. Each method has an optional background correction wavelength, depending on the assay being measured.

The protein measurement mode is also preprogrammed with the direct UV and Warburg-Christian methods to determine purified protein concentrations. The SP-400-BIO has a preprogrammed method for measuring optical density of bacterial cultures such as *E. coli* and yeast cells. This is ideal to measure cell growth before cell harvesting.

As well as these preprogrammed life science methods, this versatile spectrophotometer has measurement modes for simple photometrics, concentration, quantitation, spectrum scanning, and kinetics. This enables measurements to be performed at any selected wavelength between 198 and 800 nm.

Instrument Design

The SP-400-BIO utilizes diode array technology to scan the entire wavelength range (198 to 800 nm) in less than 3 seconds. The 1024-element diode array detector coupled with a flash xenon lamp results in a long life, robust spectrophotometer. The large color touchscreen interface is fast and responsive, making this spectrophotometer the ideal addition to any laboratory. This is all conveniently packaged, resulting in a lightweight, small footprint instrument, weighing less than 3 kg.

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USB Connectivity

There are two USB ports for data storage and printer connectivity. The easy access USB port on the front of the instrument can be used to easily store results and transfer data as tab delimited text files to Microsoft® Excel®.

Accessories

The SP-400-BIO is supplied with a micro-cuvette holder as standard, making it ideal for small sample volumes down to 50 µL. For even smaller sample volumes, the SP-400-BIO has been designed to work with the Traycell and DMV-BioCell accessories. This enables ultra-micro samples as low as 0.7 µL to be measured without the need for dilution.

Technical Specifications

Model	SP-400-BIO
Wavelength range	198 to 800 nm
Wavelength accuracy	± 2 nm
Wavelength repeatability	± 2 nm
Spectral bandwidth	3 nm
Transmittance	0 to 199.9%
Absorbance	–0.3 to 2.5 A
Photometric accuracy	± 0.01 A at 1 A and 546 nm
Stability (A)	± 0.005 A/h at 0.04 A and 546 nm after 60 minute warm-up
Noise	± 0.002 A at 0.04 A and ± 0.02 A at 2 A and 546 nm
Stray light at 340 nm, % T	< 1% T according to ANSI/ASTM E387-72
Nucleic acids	Preprogrammed methods: dsDNA, ssDNA, RNA, Oligos Concentration, purity (260/280 nm and 260/230 nm ratios), optional background correction at 320 nm Spectrum scan
Proteins	Purified proteins at 280 nm and Warburg-Christian Protein assays (Bradford, Biuret, Lowry, BCA)

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Technical Specifications (continued)

Model	SP-400-BIO
Cell density	600 nm optical density reading Conversion factor in cells/mL
Beam height	15 mm
Light source	Xenon lamp
Results memory	Limited by attached mass storage device
Removable media	USB (not supplied)
Outputs	USB x 2
Supply voltage-frequency	100–240 VAC, 50/60 Hz
Power supply	12 V DC, 3.8 A
Size (W x H x D)	21.2 x 12.0 x 42.2 cm (8.3 x 4.7 x 16.6")
Weight	2.8 kg (6.2 lb)
Warranty	2 years on the instrument, including xenon lamp

Ordering Information

Cole-Parmer model	Jenway model	Jenway legacy SKU	Item number
SP-400-BIO	Genova Bio UV-Visible Diode Array Scanning Spectrophotometer, 100-240 VAC, 50/60 Hz	720601	**83056-04**
SP-400-BIO with DMV-Biocell	Jenway model Genova Bio UV/Visible 72 Series Diode Array Scanning Spectrophotometer with DMV-BioCell	83056-76	**83056-76**

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